1900MNRAS..60..588M

angular size in the direction perpendicular to the bands. Hence it is that the bands are only seen when the arc of uneclipsed Sun has become thin. The intensified effect which can be obtained by reducing the size of the source of light is well seen in the neighbourhood of a naked arc light, which will be found to throw on the ground and surrounding walls a shadow of every considerable discontinuity in the density of the air, such as that over a lighted match.

It is easy to associate this phenomenon with the familiar twinkling of stars, which is due to more rapid and less intense alternations of air density, and therefore requires a still more minute angular size in the source of light. Thus it often happens that even the angular size of a planet has become too large for twinkling at times when fixed stars in the neighbourhood of the planet continue to twinkle perceptibly.

Addendum.

The waves dealt with in the above paper are likely to be of that more rugged type which involves a long series of strong harmonics; and it seems probable that some of these harmonics will be short enough to produce sound and may be sufficiently intense to be audible. The sound would probably be a rather confused hum like that heard in the neighbourhood of telegraph posts, but with a greater preponderance of the baser tones such as we hear in thunder. It would be interesting, therefore, to listen attentively for an effect of this kind, which if faint would perhaps be most easily heard as a somewhat musical note from stations at a moderate distance to the right and left of the track of totality.

Notes on the Total Eclipse of the Sun, 1900 *May* 28, *observed at Algiers.* By E. W. Maunder and A. C. D. Crommelin.

The watches used in the following time determinations were Usher & Cole 39936, and Isaac 10859, the latter having been kindly lent by the Hydrographer to the Admiralty, and the former by Messrs. Cole. The errors while at Algiers were obtained by comparison with the sidereal clock at the Algiers Observatory, whose errors were kindly communicated by M. Trépied. The longitude of the Observatory is assumed to be $12^m\ 8^s{\cdot}5$ E., the value given in the *Nautical Almanac.* (It may, however, be pointed out that the altitude of the Observatory, 65 feet, given in the *Nautical Almanac* is obviously in error: the correct altitude given by M. Trépied is 342·2 metres, or 1123 feet.) The following are the errors of the two watches on Greenwich Mean Time at the times when comparisons were made :—

1900MNRAS..60..588M

G.M. Time of Comparison.			Error of Usher & Cole.	Error of Isaac.
	d	h	s	s
1900 May	18	1	2·4 *f*	54·0 *f*
			stopped	
May	22	22	29·5 *f*	39·0 *f*
	26	6	36·7 *f*	31·7 *f*
	27	6	36·7 *f*	29·2 *f*
	28	21½	37·7 *f*	22·3 *f*
June	1	23	...	8·1 *f*
	5	0	62·2 *f*	...

The difference between the watches was $10^{s}{\cdot}4$ on May 28 at $1\frac{1}{2}^{h}$ and $11^{s}{\cdot}3$ on May 28 at 5^{h}.

The adopted errors at the times of first and last contact are :—

	d	h	s	s
May	28	3	36·5 *f*	25·6 *f*
		5	36·6 *f*	25·3 *f*

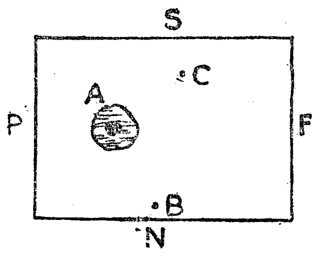
These errors have been applied in the following results, which are thus expressed in G.M.T.

	G.M.T. h	m	s	Observer.	
1st contact	3	5	14·4	A.C.	Probably at least 5 seconds late.
2nd „	4	17	17·1	M.	
3rd „	4	18	19·5	Various	
4th „	5	22	19·7	A.C.	

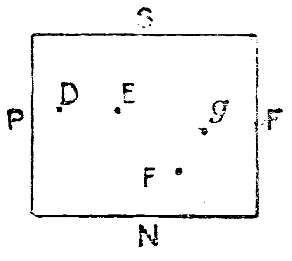
An independent determination by Rev. C. D. P. Davies gave $5^{h}\ 22^{m}\ 17^{s}{\cdot}5$ for fourth contact.

Neither M. nor A.C. observed the third contact directly, but various members of the party made the duration of totality $62^{s}{\cdot}4$ or thereabouts, which has been applied to the observed time of second contact.

There were two spot groups on the Sun, and the times of disappearance of some of the spots were noted. The accompanying rough sketches will probably suffice for the identification of the spots observed.



First Group.



Second Group.

1900MNRAS..60..588M

	h m s	
Disappearance of preceding edge of penumbra of A	3 29 7	G.M.T.
„ „ „ „ umbra „	3 29 22	
„ „ following „ penumbra „	3 29 46	
„ „ D	3 49 30	
„ „ F	3 52 5	

The place of observation was 696 feet west and 411 feet south of the Algiers Lighthouse, whose coordinates are $12^{m}\ 17^{s}{\cdot}0$ E., 36° 47′ 16″ N. Our altitude was about 120 feet.

The duration of totality was about five seconds shorter than that calculated from the *Nautical Almanac* data, and about one second shorter than that calculated from the data of the American Ephemeris. The experience of this eclipse, combined with that of the Indian eclipse of 1898, would appear to establish the superiority of the constants used by the American Ephemeris. Both ephemerides use the same semi-diameter for the Sun, but the American value for the semi-diameter of the Moon is smaller by 0″·9 than that of the *Nautical Almanac.*

Remarks on the Total Eclipse of the Sun, 1900 *May* 28, *observed at Navalmoral* (*Spain*). By Rev. S. J. Johnson.

I observed from the top of a hill a mile south of Navalmoral Station. The first nip of limbs at 2.35 (Madrid mean time) was clear and sharp. When the Sun was half obscured, thermometer three feet above the ground stood at 88°. A large portion of the Moon's limb was now visible outside the Sun, quite 3′ of arc in extent. At 3.27, when the magnitude of the eclipse reached the maximum at Greenwich, the light began to wane and became livid and unnatural. Thermometer then 84°. When eleven digits of the Sun were obscured it had gone down to 80°. Just after totality it registered 79°. In twenty-three minutes it had recovered 1° only.

The inner corona was bright round a large portion of the Sun more than five seconds before totality, but I cannot say that I noticed it after the total phase was over.

Equatorial streamers developed to the extent of two solar diameters on the western limb and of one on the eastern. They could, of course, be faintly traced further. Two feathery prominences, very conspicuous in the 2-inch telescope I was using, at the lower limb, one $1\frac{1}{2}'$ in extent, the other 1′—white, tinted with red.

The two really striking points were—

1. The scarlet sierra, or rim of brilliant red, stretching along the limb for about 150°. This was visible for eight or ten seconds